BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Spectrum Needs of Emergency Response Providers	)	WT Docket No. 05-157
	)	

To: The Commission

COMMENTS OF ARRAYCOMM, INC.

ArrayComm, Inc. (hereinafter "ArrayComm") is pleased to submit the following Comments in the above-entitled matter.

INTRODUCTION

The Commission is soliciting comments to assist it in conducting a study of the spectrum needs, both short-term and long-term, of emergency response providers. This study is mandated by Section 7502 of the Intelligence Reform Act.[1]

The Public Notice calling for such comments recaps the spectrum now available to Public Safety. It appears that the Commission often uses the term "emergency response providers" rather than "public safety" because the former encompasses a broader array of entities and organizations, both governmental and private, who are engaged in activities designed to save lives and property. The

[1] Pub. L. 108-458, 118 Stat. 3638 (2004).

Public Notice asks whether additional spectrum is needed, particularly in the 700 MHz band.[2] In a more general sense, the Commission asks what other bands might be made available, if needed. Further, once the amount of spectrum as well as its location has been identified, the Commission asks for input regarding its use for interoperability purposes and otherwise, both on a short-term basis and on a long-term basis.[3] Finally, the Commission asks for comments as to whether commercial wireless technologies can be employed to meet the communication needs of emergency service providers and, if so, to what extent.

The need for interoperability among Federal, State and local entities has been long recognized. This need extends to departments within these entities as well. It also encompasses private sector organizations, notably those in the medical and rescue community. Those who remember the Air Florida plane that crashed into the Fourteenth Street Bridge will recall that emergency service providers from D.C., Virginia and the Federal Government responded, but their effectiveness was blunted by their inability to communicate with each other. More recently, of course, the tragic events of 9/11 revealed that intercommunication among the would-be responders was too often inadequate or even nonexistent.

Exploration into how and why this situation has not been effectively addressed will involve analysis, not only of communications technology and its capabilities, but also the political relationships both within governmental entities

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[2] In a variety of Orders and NPRs (see, for example, WT Docket No. 96-86) the FCC has endeavored to move TV operations out of 700 MHz and reallocate that spectrum for wireless mobile use.

[3] Public Notice p. 2.

and between them. A column in the New York Times on April 25, by Clyde Haberman provides clear evidence that even in New York City "turf wars" continue.[4] Of course, integrating the essential resources of the medical community with its public and private components may be an even more formidable task. Commissioner Copps in his statement[5] accompanying the Public Notice raises issues that, in toto, reveal how far-reaching and deep the problem is.

ARRAYCOMM'S POSITION

Although ArrayComm's assessment is that a "total solution" may be beyond the scope of the Commission's jurisdiction, the Commission plainly has a pivotal role. Simply, through its authority to allocate spectrum and authorize its use in a manner that effectively and efficiently enables the public safety community to carry out its collective mission to preserve life and property, the Commission can define many of the key technical and policy parameters of the solution space.

It is appropriate to consider specific elements that will impact on the success of the Commission's allocation and assignment decisions in this proceeding. ArrayComm, in its participation in proceedings designed to further wireless communications, has suggested various rule and policy changes. While some of these have not been addressed specifically to public safety, they are generally pertinent to public safety as well. This proceeding provides an opportunity to bring

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[4] Mr. Haberman writes: "Who expects a lovey-dovey relationship between the two forces [police and fire departments]? Sure it would be nice. But it would also defy natural order in New York."

[5] The statement lists seven areas that should form the basis of the Commission's report to Congress. He then adds that "... emergency rooms and the medical community are integral parts…," a formidable task, indeed.

these proposals together and thereby contribute a concise package for Commission consideration.

In the past, ArrayComm has objected to Commission proposals to allocate spectrum for mobile wireless on a paired basis.[6] By proposing paired spectrum, (a channel for transmissions from "base stations" and a companion channel for transmissions from "mobiles") the Commission indirectly encouraged Frequency Division Duplex ("FDD") technologies over Time Division Duplex ("TDD") technologies. FDD systems have been historically more widely used for cellular-style systems, principally for reasons stemming from technology limitations that have since been overcome. FDD is not optimal for all types of usages. Broadband data solutions and product development today, including solutions based on IEEE 802.16 and 802.11 protocols are focused on TDD approaches. TDD is better suited to asymmetric applications, *e.g.*, the relaying of situational data from the field or the transmission of Geographic Information Systems data from a fire station to a mobile command post, and it is also more amenable to techniques for improving spectral efficiency such as adaptive antennas. Paired spectrum allocations therefore make some of the most advanced commercial wireless technologies inaccessible to first responders other than as subscribers to some commercial operator's service. The inequity that favors FDD has been recognized by the Commission but never eradicated.

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[6] See Petition for Reconsideration of ArrayComm, Inc. in WT Docket No. 99-168, filed February, 2000.

It is instructive to observe the consequences of the preference afforded FDD. Operators (commercial service providers) have necessarily purchased spectrum in which to provide services. The spectrum has been sold on a paired basis and the operators have naturally sought FDD technologies for deployment. Equipment manufacturers responded with FDD products which have since been deployed with spectral efficiencies that have changed little over the past twenty years, despite the explosive increase in demand for capacity. The cost has been that the deployment of TDD technology, a relatively new technology in the provision of high-speed mobile data in the U.S., has been retarded, and the cost of wireless data service over wide areas remains more expensive than need be.

Now, however, a unique opportunity to correct the past exists. By law, Public Safety spectrum is not subject to an auction.[7] This marketplace will not be determined by whoever bids highest in an auction. Thus, any new allocation need not and should not be paired nor made available as though there were base and mobile frequencies. The FCC did drop the "base/mobile" categorizations in its proposed auctions in WT Docket No. 99-168, but this has not satisfied either TDD or FDD proponents. Coexistence problems still exist, although there is evidence that technology can now ameliorate these situations.[8] Instead, the Commission should assist the public safety community in assessing how much spectrum is needed for specific purposes. Spectrum should then be allocated accordingly.

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[7] Section 1.2102(b) (1) of the Commission's Rules.

[8] See ITU-RM which will soon be published as ITU-RM 2045.

It should be emphasized that ArrayComm is in no way advocating that the Commission should select any specific technology. In fact, ArrayComm is pleased that the Commission has consistently espoused a position of technical neutrality for itself. Rather we are asking that the Commission provide, through its allocation and assignment authority, the flexibility for the public safety community to conclude what it will need. Those entities engaged in the task of providing emergency services are best able to determine what those services should be. We distinguish, however, between that determination and the mode in which it should be satisfied. The Commission has a responsibility to assure that spectrum is not wasted; its licensees have a corollary responsibility as well. Thus, if the user community determines that high speed mobile data should be an integral part of a national or regional public safety system, the Commission should actively assist in the "how." It is ArrayComm's judgment that the "how" for data requires an allocation, separate from that available for voice communications, an allocation which is sufficient for the deployment of TDD technologies that have been shown to be particularly suitable for high-speed wireless data services. In terms of an allocation, voice may have different coverage and reliability requirements in a first-response situation than data communications.

ArrayComm would further contend that any operational requirement for which spectrum is made available should be able to be satisfied by whatever technical means are available. Thus, were the need for high-speed mobile data established, the public safety community should be the selectors to choose among whatever technologies exist. ArrayComm is of a like mind, even where efficiency

devices, such as Adaptive Antennas, are concerned. These antennas provide improved spectrum efficiency for all systems, but they are particularly effective for TDD-based systems.[9] In spite of this, ArrayComm would not argue that their use should be mandatory.

Given the nature and history of the public safety community, we would still raise the issue as to whether there should be an increased effort to improve spectrum efficiency. In ET Docket No 02-135, ArrayComm suggested a formula whereby spectrum efficiency could be measured. In that proceeding, ArrayComm endeavored to start a dialogue on the subject rather than to defend its specific approach. We do so again. Public safety has created a number of operational efficiencies ("10-4" and its brethren, for example), designed not only to conserve spectrum, but to better perform their mission. Such an enlightened approach should be encouraged. The results may well be productive for all mobile operators and users.

ArrayComm certainly supports efforts to provide emergency response providers with whatever spectrum is needed to protect the life and property of all our people. Spectrum in and of itself will not provide the security that is wanted. It must be allocated and assigned as the result of plans developed by the appropriate public safety community. It should be available with maximum flexibility, so that new uses, as well as innovations, can be accommodated. The Commission must assure that this spectrum is used efficiently, but its role should be more in the

[9] ITU-RM 2040: Adaptive Antennas improve; TDD Systems up to 15X; FDD Systems up to 6-8X.

nature of oversight than of a determinant as to why spectrum is needed. At the present time, all inputs should be welcomed, as the Commission has done by soliciting comments. ArrayComm looks forward to offering its expertise as appropriate in the future.

Respectfully submitted,
ARRAYCOMM, INC.

By: /s/

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